

CLAIMS

1. A replicon RNA, comprising a nucleotide sequence containing at least the 5' untranslated region, the nucleotide sequence encoding NS3 protein, NS4A protein, NS4B protein, NS5A protein and NS5B protein and the 3' untranslated region on the genomic RNA of hepatitis C virus of genotype 2a.
2. The replicon RNA of claim 1, containing at least one selection marker gene or a reporter gene, and at least one IRES sequence.
3. A replicon RNA, comprising a nucleotide sequence containing the 5' untranslated region comprising the nucleotide sequence represented by SEQ ID NO: 9 or 10; at least one selection marker gene or a reporter gene; an IRES sequence; the nucleotide sequence encoding NS3 protein, NS4A protein, NS4B protein, NS5A protein and NS5B protein on the genomic RNA of hepatitis C virus of genotype 2a; and the 3' untranslated region comprising the nucleotide sequence represented by SEQ ID NO: 11 or 12.
4. The replicon RNA of any one of claims 1 to 3, wherein the genomic RNA of hepatitis C virus of genotype 2a is an RNA comprising the nucleotide sequence represented by SEQ ID NO: 3 or 5.
5. A replicon RNA, comprising the following RNA (a) or (b):
 - (a) an RNA comprising the nucleotide sequence represented by SEQ ID NO: 1 or 2; and
 - (b) an RNA comprising a nucleotide sequence derived from the nucleotide sequence represented by SEQ ID NO: 1 or 2 by deletion, substitution or addition of 1 to 10 nucleotides, and being capable of autonomous replication.

6. A replicon-replicating cell, which is prepared by introducing the replicon RNA of any one of claims 1 to 5 into a cell.

7. The replicon-replicating cell of claim 6, wherein the cell is a eukaryotic cell.

8. The replicon-replicating cell of claim 7, wherein the eukaryotic cell is a human liver-derived cell, a human uterine cervix-derived cell or a human fetal kidney-derived cell.

9. The replicon-replicating cell of claim 7, wherein the eukaryotic cell is any one cell selected from the group consisting of an Huh7 cell, an HepG2 cell, an IMY-N9 cell, an HeLa cell and a 293 cell.

10. The replicon RNA of any one of claims 1 to 5, which is for producing or evaluating a therapeutic agent or a diagnostic agent against hepatitis C virus infection.

11. The replicon-replicating cell of any one of claims 6 to 9, which is for producing or evaluating a therapeutic agent or a diagnostic agent against hepatitis C virus infection.

12. The replicon RNA of any one of claims 1 to 5, which is for producing a vaccine against hepatitis C virus infection.

13. The replicon-replicating cell of any one of claims 6 to 9, which is for producing a vaccine against hepatitis C virus infection.

14. A method of producing a replicon RNA of hepatitis C virus of genotype 2a, comprising extracting the replicon RNA from the replicon-replicating cell of any

one of claims 6 to 9.

15. A method of producing a viral protein of hepatitis C virus of genotype 2a, comprising culturing the replicon-replicating cell of any one of claims 6 to 9, and obtaining the viral protein from the resulting culture product.

16. A method of screening for a substance promoting or suppressing the replication of hepatitis C virus, comprising culturing the replicon-replicating cell of any one of claims 6 to 9 in the presence of a test substance, and detecting the replication of a replicon RNA in the resulting culture product.

17. A method of increasing the replication efficiency of the replicon RNA of hepatitis C virus of genotype 2a, comprising performing once or more the following: obtaining a replicated replicon RNA from the replicon-replicating cell of any one of claims 6 to 9, and introducing the thus obtained replicated replicon RNA into a cell that is different from the replicon-replicating cell so as to prepare a new replicon-replicating cell.

18. The method of claim 17, wherein the replication efficiency increases to become at least two times greater than that of the replicon RNA that is introduced at the beginning into the replicon-replicating cell.

19. A method of producing a replicon RNA of hepatitis C virus of genotype 2a having increased replication efficiency, comprising performing once or more the following: obtaining a replicated replicon RNA from the replicon-replicating cell of any one of claims 6 to 9, and introducing the thus obtained replicated replicon RNA into a cell that is different from the replicon-replicating cell so as to prepare a new replicon-replicating cell; and obtaining a replicated replicon RNA from the finally obtained replicon-replicating cell.

20. A method of producing a replicon RNA of hepatitis C virus of genotype 2a having increased replication efficiency, comprising detecting a nucleotide mutation or an amino acid mutation between the replicon RNA that is produced so as to have an increased replication efficiency by the method of claim 19 and the replicon RNA that is introduced at the beginning into the replicon-replicating cell; and introducing the thus detected nucleotide mutation or amino acid mutation into a replicon RNA whose replication efficiency is to be increased.

21. A replicon RNA, comprising a nucleotide sequence derived from the nucleotide sequence represented by SEQ ID NO: 1 by at least one mutation selected from the group consisting of the following (a) to (u):

- (a) a mutation from A to G at nucleotide site 7157;
- (b) a mutation from C to U at nucleotide site 4955;
- (c) a mutation from A to G at nucleotide site 4936;
- (d) a mutation from A to G at nucleotide site 5000;
- (e) a mutation from A to G at nucleotide site 7288;
- (f) a mutation from G to U at nucleotide site 5901;
- (g) a mutation from A to U at nucleotide site 6113;
- (h) a mutation from A to G at nucleotide site 2890;
- (i) a mutation from C to A at nucleotide site 6826;
- (j) a mutation from C to A at nucleotide site 6887;
- (k) a mutation from U to A at nucleotide site 6580;
- (l) a mutation from U to C at nucleotide site 7159;
- (m) a mutation from U to A at nucleotide site 7230;
- (n) a mutation from C to A at nucleotide site 6943;
- (o) a mutation from G to A at nucleotide site 5687;
- (p) a mutation from A to G at nucleotide site 6110;
- (q) a mutation from U to C at nucleotide site 5550;

- (r) a mutation from A to G at nucleotide site 7217;
- (s) a mutation from A to G at nucleotide site 3643;
- (t) a mutation from G to A at nucleotide site 5851; and
- (u) a mutation from G to A at nucleotide site 5914.